DOCUMENT RESUME

ED 231 681 SO 014 644

AUTHOR de la Cruz, Leonardo
TITLE Curricular Renovation through Population Education.
INSTITUTION United Nations Educational, Scientific, and Cultural Organization, Bangkok (Thailand). Regional Office for Education in Asia and the Pacific.
REPORT NO BKP/81/D/443-100
PUB DATE May 81
NOTE 21p.; Best copy available. Paper prepared in a seminar-workshop on the Department of Curriculum in Population Education (Nepal, May 1981).
PUB TYPE Guides - Non-Classroom Use (055)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Comparative Education; *Curriculum Design; *Curriculum Development; Developing Nations; Elementary Secondary Education; Foreign Countries; *Models; *Population Education
IDENTIFIERS Nepal

ABSTRACT

The document is intended to assist educators in Nepal in implementing curriculum reform or improvement by using population education as a means. Procedural designs that can be followed are described. First, the goals of population education must be defined. Second, a decision has to be made as to which body of knowledge or population concepts are necessary to realize the stated goals and objectives. Third, subject areas into which population education can be infused or integrated must be identified at each grade level. Fourth, a scope and sequence of population education concepts must be developed. The fifth step in the process is the development of curriculum materials for teachers and students. Sixth, population education must be institutionalized in the educational system. And, finally, the population education curriculum materials must be evaluated. Throughout the document, examples and illustrations are provided, e.g., a scope and sequence chart is included. (RM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Maria Rao Sunthara

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED231681

UNESCO REGIONAL OFFICE FOR EDUCATION IN ASIA AND THE PACIFIC
Bangkok

CURRICULAR RENOVATION THROUGH POPULATION EDUCATION•

There is no country today - big or small that does not have a curriculum, especially for the nation's schools. By curriculum, to borrow from Kerr, is meant, "all learning planned and guided by the school, so that not only the content of courses, the syllabus, but also the methods employed, the way the school is organized, the norms and values, the social skills which the school intends its pupils to acquire".1/ Nepal has certainly a well-thought out curriculum, hence it is misnomer to talk about developing another curriculum, i.e., a population education curriculum. I think what we really want to do is to renovate the existing curriculum through population education. The extent of curricular renovation possible through population education depends, of course, on what we perceive as the nature, goal, and role of population education vis-a-vis the philosophical, sociological, psychological and pedagogical bases of the total school curriculum.

In effecting curricular reform or improvement, using population education as a means, there are procedural designs that could be followed. It should be noted that population education here is viewed as an educational programme that consist of both content (derived largely from demography and population studies) and method (premised on the idea that it is not designed to indoctrinate but to pose realistic alternatives, to examine consequences of each alternative, and to enable individuals to formulate rational decision-making behaviour regarding population issues).

The different steps of the procedural design for renovating the curriculum through population education are briefly discussed below, and illustrated in a model given on page 2.

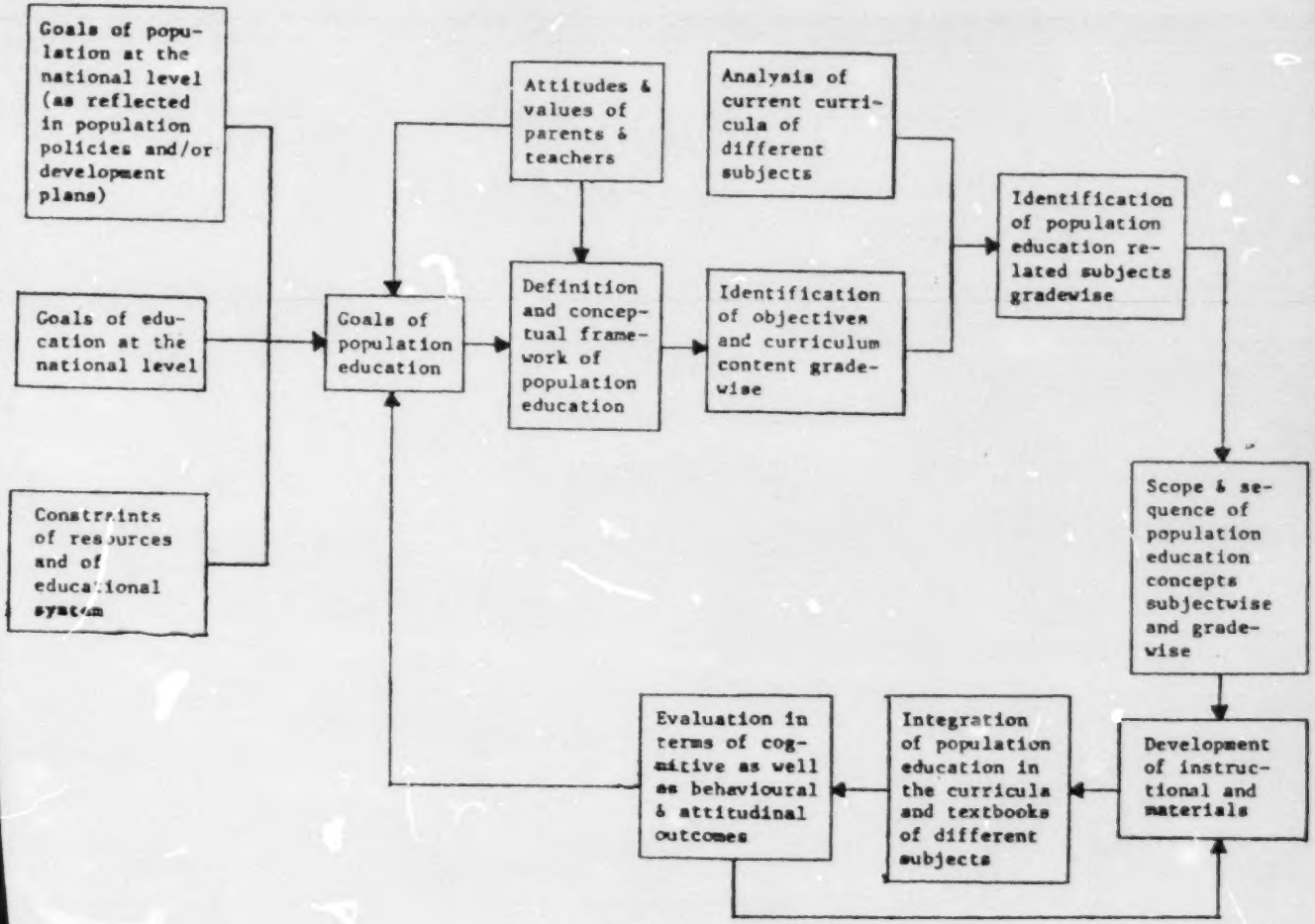
1. Defining the Goals of Population Education

The goals of population education in Nepal has already been spelled out. The Project Document, NEP/80/P08, "Population Education Programme", is clear about the goals of population education, which is "to gear the entire educational system, formal and non-formal, to the realization of the potential role of education in the developmental efforts ofthe country, and of the interrelationships between population situation and different aspects of the quality of life at the micro and macro levels".

SP014644

•Paper prepared by Dr. Leonardo de la Cruz, Regional Adviser on Population Education, in a Seminar-Workshop on the Development of Curriculum in Population Education in Nepal in May 1981.

MODEL FOR CURRICULUM DEVELOPMENT IN POPULATION EDUCATION USING INTEGRATION APPROACH


Goals of population at the national level (as reflected in population policies and/or development plans)
Goals of education at the national level
Constraints of resources and of educational system
Attitudes & values of parents & teachers
Goals of population education
Definition and conceptual framework of population education
Analysis of current curricula of different subjects
Identification of objectives and curriculum content gradewise
Identification of population education related subjects gradewise
Scope & sequence of population education concepts subjectwise and gradewise
Development of instructional and materials
Integration of population education in the curricula and textbooks of different subjects
Evaluation in terms of cognitive as well as behavioural & attitudinal outcomes

Source: Dr. R.C. Sharma

The following are the main long-range objectives of the programme:

a) Develop in the target audience an insight into the interrelationships between population growth and the process of social and economic development at the individual, family, society, national and international levels.

b) Develop desirable attitudes and behaviours in the teachers, students and the community at large towards population issues so that they may take rational decisions about their family size and the quality of life that they would like to have.

c) Institutionalize population education in the formal education system, including university, and the non-formal education programme of the Ministry of Education.

The above long-range objectives are what R.S. Peters would call aims, which he likens to a sign post or a compass, giving a direction in which to travel, and is therefore value laden2/ i.e., the need to reckon with population growth as one factor impinging on national development efforts. The goals of population education have to be consistent with the priorities for national development, and the socio-cultural values of the people.

The project document (NEP/80/P08) has also a set of immediate objectives. However, a distinction need to be made between the objectives of a project and a programme. Project connotes the operation of population education while special funding (e.g. international funding) is available. However, I am sure this is not the intention, hence as the project title implies, i.e. "Population Education Programme" it is meant to be institutionalized into the educational system. There is, therefore, an urgent need to formulate a set of objectives for the population education programme in Nepal. There are certain criteria that ought to be borne in mind in formulating objectives, inter-alia that objectives should:

a) be stated in terms of outcomes (such as knowledge gain and attitude change), rather than mere enumeration of activities (or efforts to be put into the project/ programme),

b) be explicit and precise, and describe the result which constitute achievement of the objectives in terms which are verifiable,3/

c) include cognitive and affective learning (not much

of psychomoter is expected in population education),

d) be mutually supportive.

An example of a set of objectives for population education programme is as follows:

a) To develop an understanding of basic demographic concepts and measurements.

b) To develop an awareness of the interrelationship between population change and development, including aspects of quality of life.

c) To develop an awareness of the attitudes, beliefs and values affecting decision-making on population issues.

d) To develop an awareness of the importance of national and international population policies and programmes.

e) To develop decision-making ability and desirable attitudes, values and behaviour related to goals a, b, c, and d. 4/

It should be noted that the objectives cited above take into consideration both the learners' cognitive and affective domains, precisely because the acquisition of knowledge of population concepts are important only in as far as it result in desirable attitudes and behavioural intent (if not behaviour) regarding population problems and issues.

2. Development of a Conceptual Structure

A decision has to be made on what body of knowledge or population concepts are necessary to realize the goals and objectives of population education. This is not a simple case of enumerating demographic and population concepts, but more important is the organization of such content in a logical scheme. Concept, as used in this paper refers to what Dearden refers to as the emphasis on "ideas" a reaction against mere regurgitation, rote learning without any idea of what one is doing. 5/ Below is an example of a set of population education concepts.

a) To develop an understanding of basic demographic concepts and measurements.

i) census/population survey

ii) population at micro- and macro-levels

(a) size
(b) distribution - urban, rural

(c) density
(d) composition - age, sex and occupation
(e) dependency ratio.

iii) fertility

iv) growth rate

(a) birth
(b) death/mortality
(c) migration

v) natural increase

vi) demographic transition

vii) zero population growth - replacement level.

b) To develop an awareness of the interrelationship between population change and development including aspects of quality of life.

i) Effect of population change on:

(a) food and nutrition
(b) housing facilities
(c) health facilities
(d) education facilities
(e) economic status
(f) employment
(g) resources
(h) environment
(i) transportation
(j) family life.

ii) Relationship between optimum family size and optimum population size.

c) To develop an awareness of the attitudes, beliefs and values affecting decision-making on population issues.

i) religious beliefs, e.g.:

(a) a child as a divine gift
(b) only a male child can perform the last rites for the parents.

ii) attitudes toward children (preference for male children)

iii) attitudes toward women and child-bearing

iv) children as economic asset:

(a) child labour
(b) old age insurance

v) children as proof of virility/fertility

vi) minority feelings in certain ethnic, religious or tribal groups - politics of numbers.

d) To develop an awareness of the importance of national and international population policies and programmes.

i) national population policies and programmes: implication to development and education

ii) planned population policy and population as an asset

iii) population incentives and disincentives (example from certain countries)

iv) agencies and bodies involved in population programmes:

(a) national
(b) international.

In addition to a set of population education concepts, generalizations of varying complexity need to be formulated for each population concept and sub-concept. Below is an example of some generalizations for each of the sub-concepts under "population at the micro- and macro-levels". /See 2, (a) (ii) above./

CONTENT	
Sub-concept	Sub-generalization
1) Population	The size of the family, the class and the community varies.
2) Population distribution	The distribution of population in urban and rural areas is occuring in a planned or unplanned manner.
3) Population density	Population density varies from sparse to dense, relative to land area.
4) Population composition	The nature of population composition is caused by variations in age, sex, ethnic and occupational groups.

The above sub-concepts and sub-generalizations would acquire added meaning if the specific objectives and population concepts by grade-level are identified at this point. For instance, one way of doing this is as follows:

CONCEPTS	SUB-CONCEPTS	OBJECTIVES	GRADE LEVEL			
			Elementary		Middle Level	High School
			Lower	Upper		
A. THE FAMILY SIZE	1. Family size, number of family members.*	1. To develop an ability to compare the number of family members by comparing sets by one-to-one correspondence.	X	X		
	2. Number of friends of the family members.*	2. To compare non-equivalent sets in relation to family.	X	X		
	3. Comparison of the number of one's family members with those of friends.*	3. To count the members of the family using cardinal numbers.	X	X		
	4. Dependents.	4. To identify sets and sub-sets in relation to members of the family.	X	X		
	5. Sequence of births.*	5. To solve simple problems in addition and subtraction regarding family size.	X	X		
		6. To use ordinal numbers in stating the sequence of the family members according to birth.		X		
		7. To solve practical problems on division regarding money and family size.	X	X	X	X

Source: Unesco ROEAP "Population Education in Mathematics" 1980. p.1.

CONCEPTS	SUB-CONCEPTS	OBJECTIVES	GRADE LEVEL			
			Elementary		Middle Level	High School
			Lower	Upper		
		8. To identify the equivalent parts of a whole in relation to family size.		X	X	X

3. Identifying Plug-in Points in Appropriate Subjects by Grade Level

In most countries, where population education has been introduced for the first time into the curriculum of schools, population education is not offered as a separate discipline. This is a realization of the fact that in most cases the curriculum at the elementary, secondary and tertiary levels are already over crowded. Population education is, therefore, invariably introduced as in innovative curricular enrichment - both content and methodology-wise. Contents drawn from demography, population studies and other population-related subjects are used in enriching existing school disciplines such as health education, home economics, the natural sciences (especially Biology) and social studies (including civics, geography, economics), and mathematics.

To ensure logical integration and enrichment require two prerequisites, namely (i) full grasps of the different population concepts to integrate, and (ii) a thorough knowledge of the content coverage or scope and sequence of the discipline to be enriched or in which to integrate, whereby natural plug-in points in the latter are identified. It is assumed that the first requisite would have been done in Step 2. Step 3 then should be devoted to examining the content of existing school subjects to determine which would lend itself to enrichment through the addition of relevant population concepts. Population concepts are meant to be integrated and/or infused, and not merely appended, as appendix connotes it can be removed anytime without harm on the curriculum. It is, therefore, crucial to identify natural plug-in points in appropriate and existing school subjects.

There are three main approaches adopted for introducing population education in countries of Asia and the Pacific Region, namely infusion, integration and later, as separate subject. The infusion approach is more of an ad-hoc arrangements whereby population-related examples are substituted in existing curricular materials. Integration on the other hand refers to a more systematic incorporation of relevant population content into the syllabi, a process whereby specialists in different

school disciplines, population education and curriculum development need to work together bearing in mind the need to provide young people and adults with an awareness of the interrelationship between population change and development as well as components of quality of life such as housing, clothing, food and nutrition, health, environment, resources, employment, education and other social services.

In view of the ultimate goal of population education, that of influencing attitudes and behaviour related to population-related decisions, the methodologies of teaching most appropriate are those that are inquiry and value clarifying oriented.

4. Development of Scope and Sequence of Population Education Concepts

In Step 2, attempts are made to formulate generalizations around population concepts while in Step 3 plug-in points in different subjects are identified. In Step 4, population education are sequenced gradewise and subjectwise. This is usually shown in a bi-dimensional chart, an example of which is given on the next page. Wheeler refers to this as scope (referring to the horizontal relationships) and sequence (to the vertical). 6/

SCOPE AND SEQUENCE OF POPULATION EDUCATION CONCEPTS*

BEST COPY AVAILABLE

Content areas	Generalizations (Grades/Subjects)	Elementary School (1 to 6)	Middle School (7 to 9)	High School (10 to 12)
I. Human reproduction and family planning	I.1 Human reproduction is a natural phenomenon of human life.	S (3)	N (9) H (9)	SC, B, H
	I.2 Physiological development preceeds emotional development.	PE (6)	N (7,9)	SC
	I.3 Fertility behaviour is a kind of interaction between the sexes, and is affected by physical, phychological and social factors.			SC, B, PE
	I.4 The given sex affects in many ways the individuals from the infancy to the adult.	SS (2,6)	N (7)	SC
	I.5 Family planning is an old practice in many cultures.			SC, PE, B, H
	I.6 Family planning is a basic means in population control.	SS (5)	SS (8,9)	G
II. Family size and standards of living	II.1 Standard of living is affected by the relationship between the labour force and the work available.		H (7)	G, P
	II.2 Family size has direct relationship with the economic stability of the family and the extent to which the individual's desires are met.	SS (3,5)	H (7) SS (8,9)	NH, SC, H
	II.3 Culture and customs determine the expected standard of living.	SS (4)	SS (7)	
	II.4 Standard of living has close relationship with the availability of public services.	SS (5)		SC
III. Population and the environment	III.1 Human beings are part of the ecosystem.	N (1,4,6)	N (7,8)	B
	III.2 Man has dominated his environment with his creative intelligence.	N (3,6) SS (4)	N (7)	WH, B, PE
	III.3 The industrial development has added new dimensions to the relations between society and the environment.	N (4) NH (6)	SS (8)	H, SC, PE

* Adapted from KEDI, Curriculum Development for Population Education. Seoul, 1975.

Key: S = Science; N = Nature; SS = Social Studies; B = Biology; H = Home Economy; PE = Physical Education; P = Politics-Economy; SC = Society and Culture; G = Geography; NH = Natural History; WH = World History

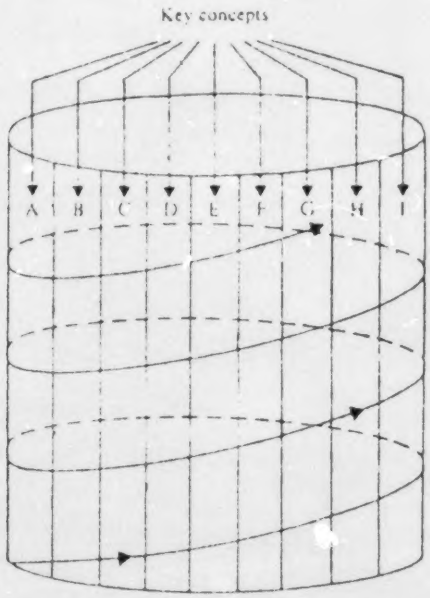
BEST COPY AVAILABLE

Content areas	Generalizations / Grades/Subjects	Elementary School (1 to 6)	Middle School (7 to 9)	High School (10 to 12)
IV. Population and the economy	IV.1 Public services can be made available through the harmonious combination of the people, the institutions and the capital.	SS (2,3,4, 5,6) NH (6)	SS (7,9)	NH, P
	IV.2 Public services tend to lag behind the population changes.	SS (1,4,5, 6) PE (5)	SS (7) PE (9)	SC
	IV.3 Man, for a better life, tends to drifts to the places where goods, services and employment are more readily available.	SS (2,3,4, 5) NH (6)	SS (7,8)	G, NH, WH, SC
	IV.4 Trade and industry develop in the areas where the labour force, resources and transportation are more easily available.	SS (4,5)	SS (7,9)	G, NH, SC
	IV.5 The individual's savings affect investments, industrial development and the nations' economic growth.	SS (3,4,5)		SS, SC, P
	IV.6 Population growth takes a deep "bite" out of the savings required for the nation's economic growth.	SS (3,5)	SS (7)	G, SC, P
	IV.7 High quality of techniques, education, the labour force and leadership are important factors for economic growth	SS (5)	SS (9)	SC, P
	IV.8 Economic growth following industrial development has brought about a considerable decrease in mortality rate as well as decrease in the fertility rate.	NH (6)	SS (7,9)	G, NH, WH, SC, P
V. The effects of population phenomenon on the individual and collective lives	V.1 In order that man lives within the limits of resources on the earth, he must reasonably limit his desires.	SS (4,5)	SS (7,8)	G, P
	V.2 Population congestion exerts direct influence on the quality of the individual and of the society.	SS (3,4,5)	SS (7)	G, NH, SC
	V.3 People living in the highly populated countries face the problems of illiteracy, poverty and disease.	SS (6)	SS (7)	G, SC, P, H
	V.4 Today, population problems have become a global concern, as the development of transportation and communication bring together many nations closer, and the need for economic cooperation increases.	SS (2,5,6)	SS (7)	G, WH, SC
	V.5 The national development has close relationship with the resources available and population size.	SS (4,6)	SS (7)	G, WH

BEST COPY AVAILABLE

Content areas / Grades/Subjects / Generalizations		Elementary School (1 to 6)	Middle School (7 to 9)	High School (10 to 12)
VI. Population policy and programme	VI.1 The family planning programmes are determined by the nation's population policies.	SS (1,5) NH (5,6)	SS (7,8)	G, SC
	VI.2 Population policy at the national level has long been in effect in many countries.	SS (5) NH (5,6)		NH, WH, P
	VI.3 The social customs and religious values are the important factors which affect national population policies.		SS (8,9)	G, WH, SC, P
	VI.4. Various national policies, other than population policies, affect directly or indirectly population change.	SS (5)	SS (7,8)	G, NH, WH, P
	VI.5 The international organizations and funds have been supporting population programmes of many developing countries.	SS (1,3,5, 6)	SS (7,9)	G, NH, SC, P

The scope and sequence recommended is one which Bruner calls spiral curriculum. He writes, that if one respects the ways of thought of the growing child it is possible to introduce him at an early age to the ideas and styles that in later life make an educated man. It is called spiral because the learner returns to familiar ideas and concepts, but presented through alternative examples, and at a higher level. 7/ The scope and sequence in the preceding pages might be illustrated as follows: 8/



A. Demographic Concepts and Measures

B. Human Reproduction and Family Planning

C. Family Size and Standard of Living

D. Population and Environment

E. Population and Resources

F. Population and the Economy

G. The Effects of Population Phenomenon on the Individual and Collective Lives

H. Population Policy and Programmes

I. Attitudes, Beliefs and Values Affecting Decision-Making on Population Issues.

5. Development of Curricular Materials for Teachers and Students

When population education is regarded as a means for curricular renovation, then the process of developing curricular materials for teachers and students becomes a challenging one. A purely expository approach to learning is ruled out. Population data and information become useful only as a means for concept attainment, clarifying one's values and in arriving at well-thought-out generalizations that later become bases for decision-making about population issues. Inquiry, values clarification, role-playing, gaming and simulation then become more appropriate strategies in wrestling with population problems and issues. Studies have shown that when discover/inquiry and values clarification strategies are used versus the expository approach, more concepts are remembered much longer. Thinking skills are better developed and more desirable attitude changes occur - all of which are statistically significant. 9/

In elaborating on the conceptual framework in population education, it is advisable to think of the learning experiences and/or teaching strategies, the teaching aids and/or instructional materials, and the evaluation strategies that would be used. All these will determine the kind of curricular materials that ought to be developed. A crude example of such a scheme is given on the next page.

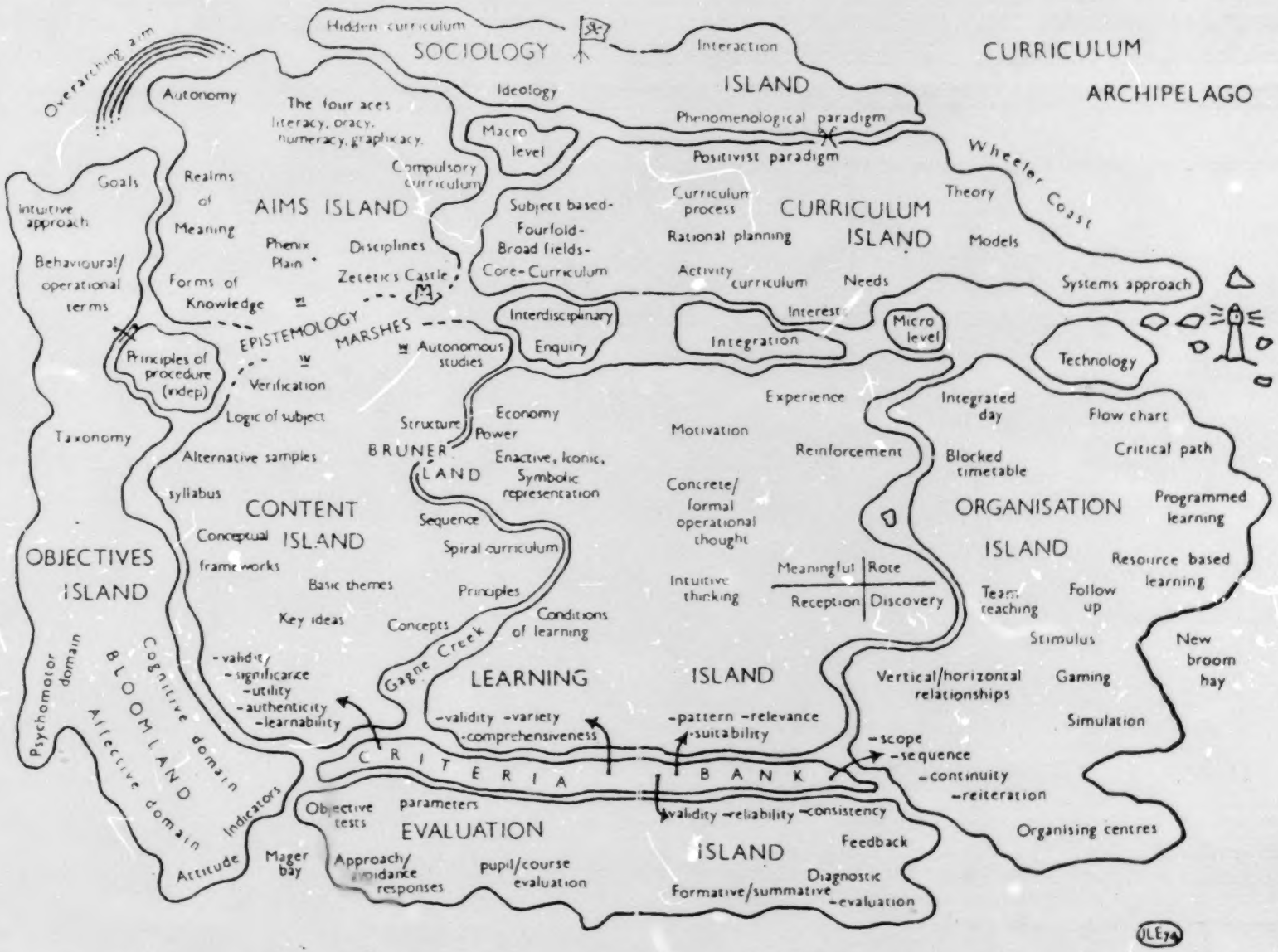
CONTENT		LEARNING EXPERIENCES	TEACHING AIDS	EVALUATION STRATEGY
Sub-concept	Sub-generalization			
1) Population size	The size of the family, the class and the community varies	1. Children to role-play parents of small and large families. 2. Children to examine pictures of small and large families. 3. Children to examine pictures of small/big schools and small/big communities and simulate conditions of crowded school. (Grades I-VI)	1. Pictures depicting small families and large families, small/large schools and small/large communities. 2. Monopoly/Demopoly sets.	1. Check list 2. Peer evaluation 3. Observation by teacher.
2) Population distribution	The distribution of population in urban and rural areas is occurring in a planned or unplanned manner.	1. Children describe experiences of visits to rural or urban areas. 2. Case study of rural and/or urban areas. OR Examination of pictures depicting rural and urban areas. (Grades V-VI)	1. Pictures depicting rural or urban areas. 2. Population distribution maps.	1. Check list 2. Pencil and paper tests.
3) Population density	Population density varies from sparse to dense, relative to land area	1. Finding the number of people in the classroom, the area of classroom and the calculating density of the classroom - Project. 2. Finding the number of people in a small locality, the area of the calculating/estimating the density of the locality - Project. (Grades IV-VI)	1. Measuring tape 2. Notebooks 3. Map of the locality chosen 4. Plan of classroom.	1. Check list 2. Evaluation results of projects.
4) Population composition	The nature of population composition is caused by variations in age, sex, ethnic and occupational groups	1. Survey of the composition of classroom in terms of age, sex and ethnic group. (Grades I-III) 2. Survey of the composition of the school in terms of age, sex and ethnic groups. (Grades IV-VI) 3. Survey of the composition of the community in terms of age, sex, ethnic group and occupation. (Grades IV-VI)	1. Questionnaire 2. Map of community 3. School records 4. Charts showing variations in age, sex, ethnic and occupational groups (in picture form)	1. Check list 2. Evaluation results of the survey.

6. Institutionalizing Population Education in the Educational System

As cited earlier, one of the main goals of Population Education in Nepal is to institutionalize the discipline in the educational system, whereby at some future time population education would no longer be needed as a separate activity as it would eventually become genuinely integrated in the total educational effort of the country. One of the best ways to ensure this, is for the curricular materials in population education to be wholly integrated in the total school curriculum, in the prescribed textbooks and in the other learning/teaching materials used in the educational system - both formal and non-formal. This, however, takes time as it seldom happens that because population content is to be used to renovate the curriculum, that the total school curriculum is immediately and drastically revamped. Very often, population education has to wait until the syllabi and textbooks of the mother subjects (subject in which to integrate) are revised. In many countries of the Asia and the Pacific region, a prescribed textbook has a five-year life span - during which no revision nor change is allowed. Some interim arrangements are then resorted to, such as the development of teaching units for use by teachers and supplementary reading materials. (Please see L. de la Cruz's paper "Development of Teaching/Trainers Unit: Springboard for Discussion".)

7. Evaluation of Curricular Materials in Population Education

Very often we in education erroneously presume that when there is teaching, automatically learning takes place; and that learners only learn because we teach them. Unfortunately, this is not so. There can be teaching but no learning, but there could be learning even without teaching. It is, therefore, imperative to have evaluation built in, in any educational programme, such as population education. While evaluation is extremely important, no attempt will be made to discuss this in detail here, only because our Regional Mobile Team on Population Education have developed a whole book on "Manual on Evaluation in Population Education", a chapter of which is devoted solely to "evaluating curriculum materials and the teaching/learning process". One cannot, however, over-emphasize the need for careful assessment and measurement (whenever possible) of the impact of curricular materials in population education on the learners' knowledge and understanding, and more important on the learners' attitudes, values and behavioural intent relevant to population issues and problems. This is extremely important if only to manifest recognition of the fact that population education has a crucial mission - that of enabling the youth and adults to make national decisions about their family size and the quality of life that would like to have.



James Eaton, An A B C of the Curriculum. Edinburgh, England: Oliver and Boyd, 1975.

BEST COPY AVAILABLE

Concluding Remark

Nepal is very much in the geographic map of the world. Indeed, no one goes to school anywhere in the globe and fails to learn that the highest mountain in the world is Mr. Everest, which is in Nepal Of course, Nepal is noted for many other esoteric things. I have no doubt that the curricular innovation via population education - the expected output of this Seminar-Workshop will be one other examplar in the Asia and Pacific region - which will also earn for Nepal a distinguished place in the population education map of the region, if not of the whole world. (This comment is inspired by James Eaton's Curriculum Archipelago which is attached.)

.....

FOOTNOTES

1. J.F. Kerr (ed.) Changing the Curriculum. London: University of London Press, 1968. Chapter I.
2. R.S. Peters, Authority, Responsibility and Education. London: Allen and Ulwin, 1973. Chapter 8.
3. UNFPA Instructions for the Preparation of a Project Document (UNFPA/19/Rev. No. 2)
4. Group Training Course, 1980.
5. R.F. Dearden, The Philosophy of Primary Education. London: Routledge and Kegan, 1968. Chapter 6.
6. D.K. Wheeler, Curriculum Process. London: University of London Press, 1967. pp. 247-248.
7. J. Bruner, The Process of Education. Cambridge, Mass: Harvard University Press, 1960. pp. 52-54.
8. The drawing is based on James Eaton, An ABC of the Curriculum. Edinburgh, England: Oliver and Boyd, 1975.
9. Studies done by L. de la Cruz and Yong-Duck Paik in the Philippines.